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Perforation of Dual suply collateral channnel complicating CTO-PCI

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Introduction

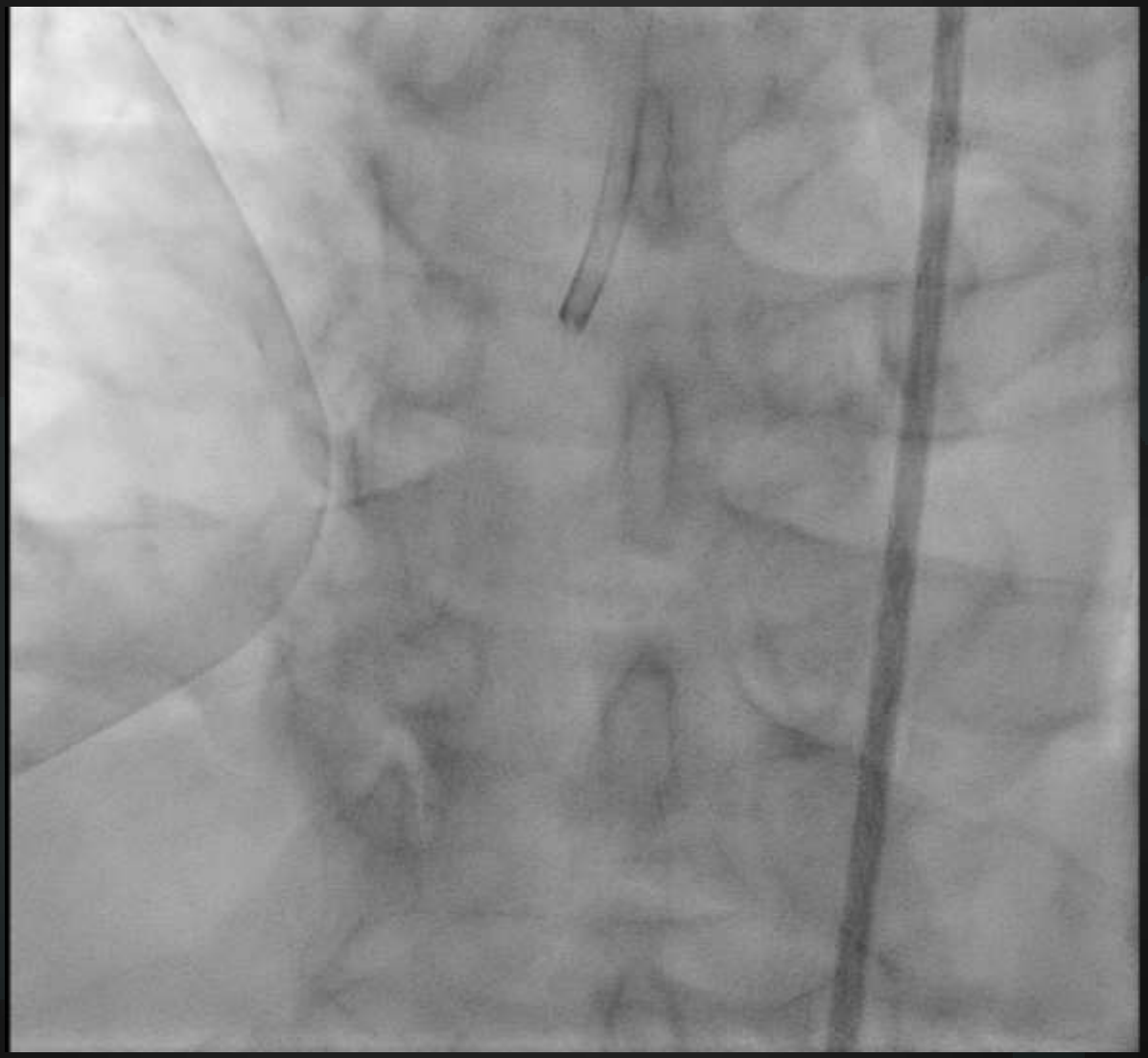
- CTO the final frontier: have long been considered the most chalenging lesion for PCI
- Retrograde approach through septal and epicardial collateral channels is now becoming a popular strategy: 80% succes rate, 2% complication
- Coronary perforation is the most prevalent complication... How to manage?

CASE

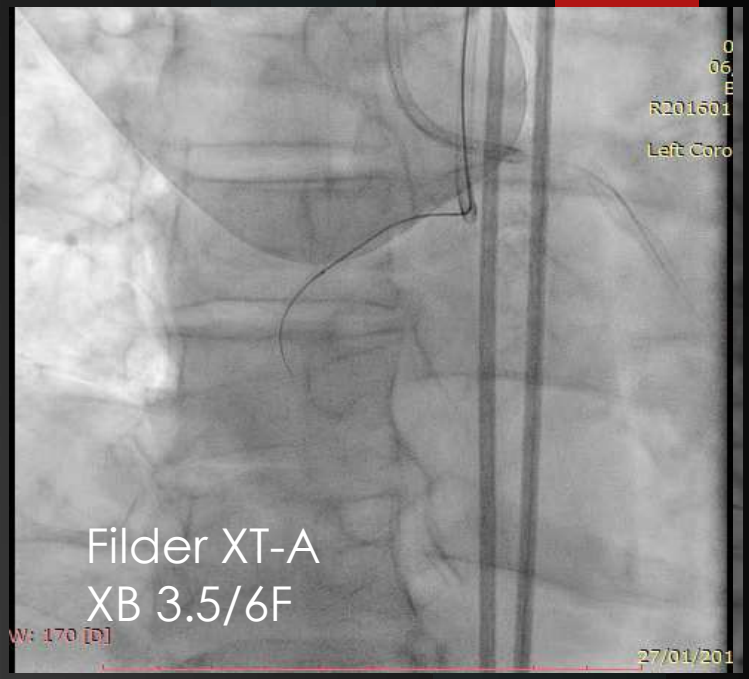
- Male, 67 y.o
- Diabetes, hypertension, CHF
- PCI 1 month before for severe LAD stenosis and CTO LCx; staging CTO RCA
- Good functional class improvement since the last procedure

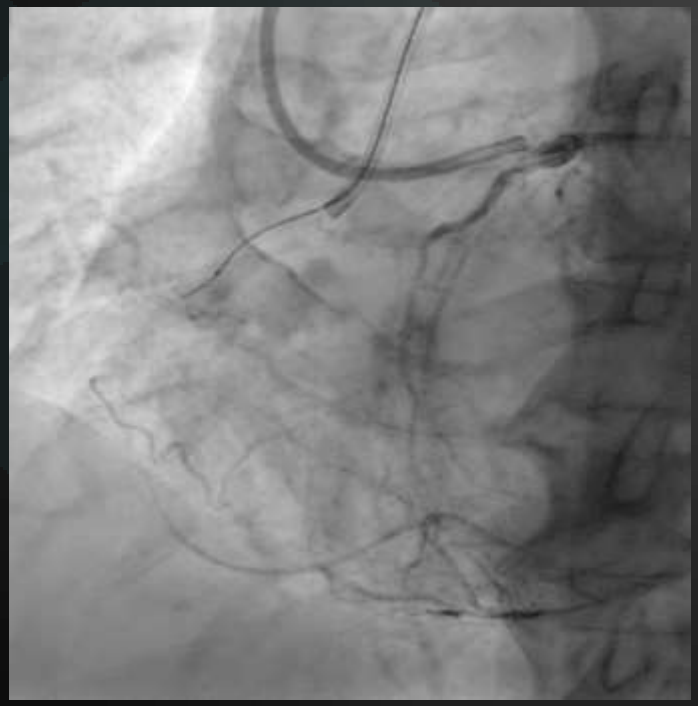
Coronary Angiogram

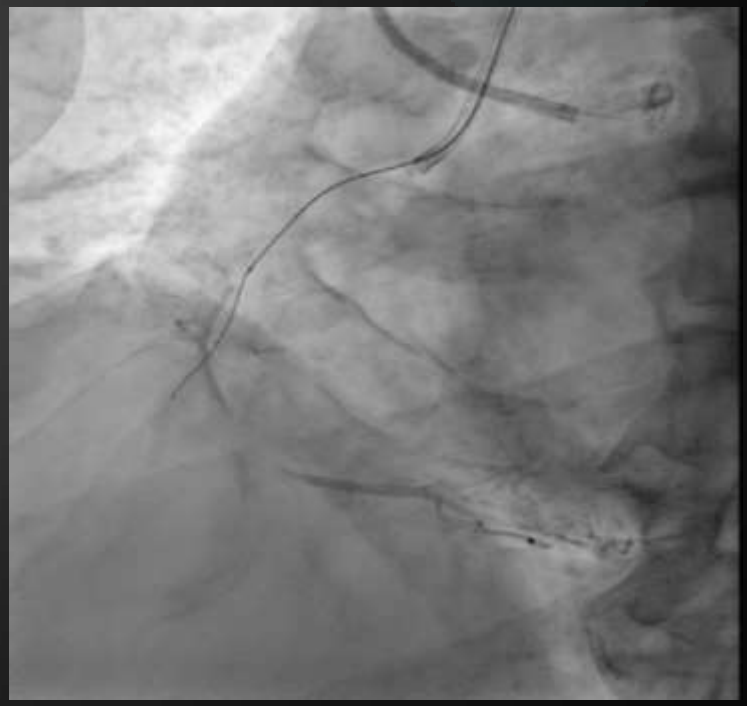
JR 4 7F



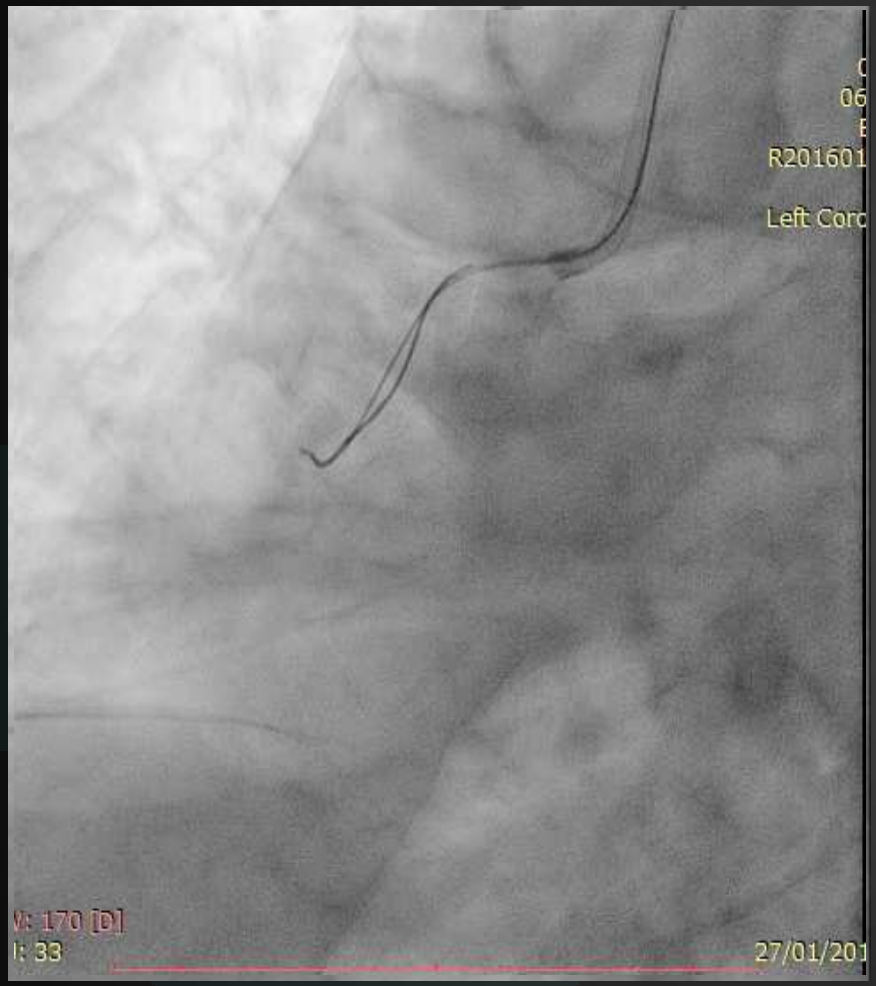

R201601
Left Coro
Fine cross, Runtrough
Hypercoat
27/01/201

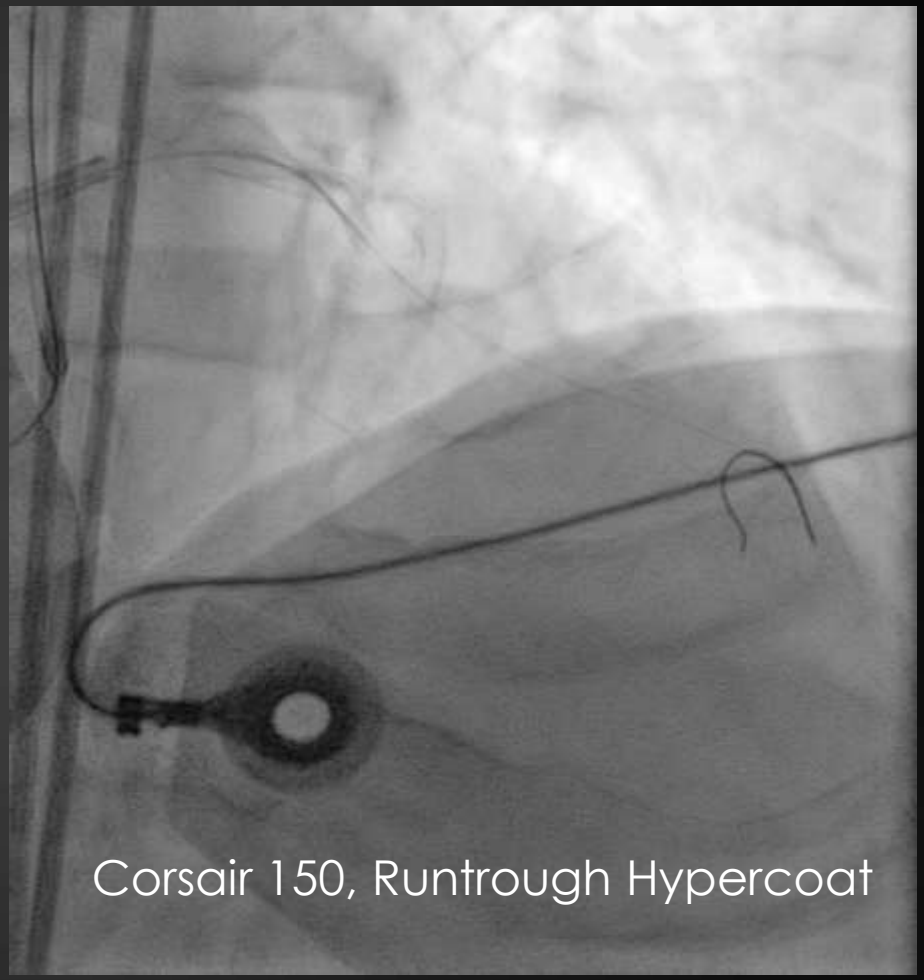

R201601
Left Coro
Filder XT-A
XB 3.5/6F
27/01/201



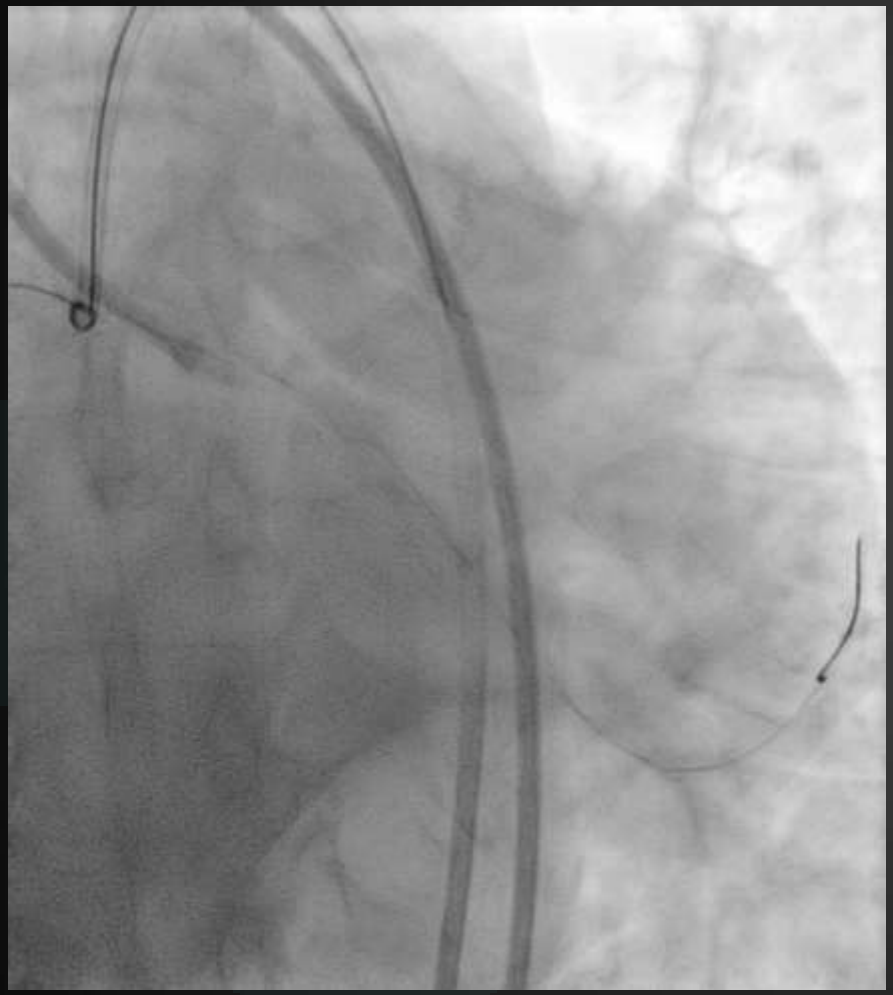


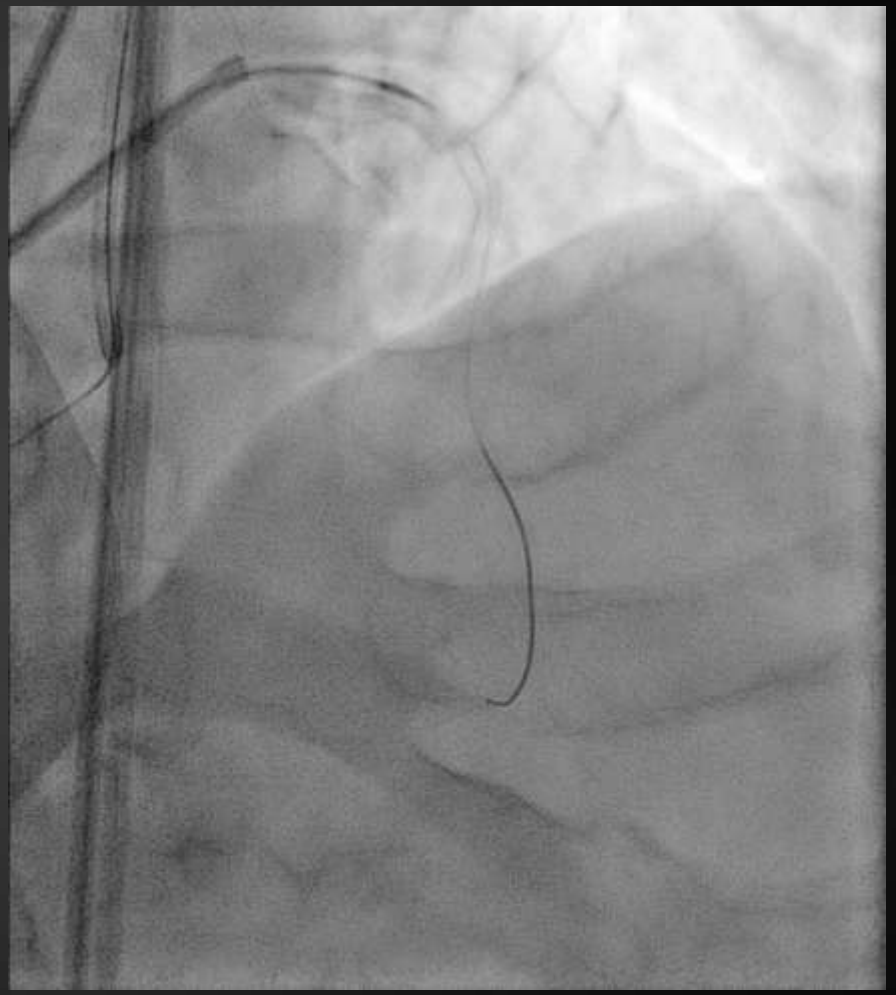
Retrograde Approach

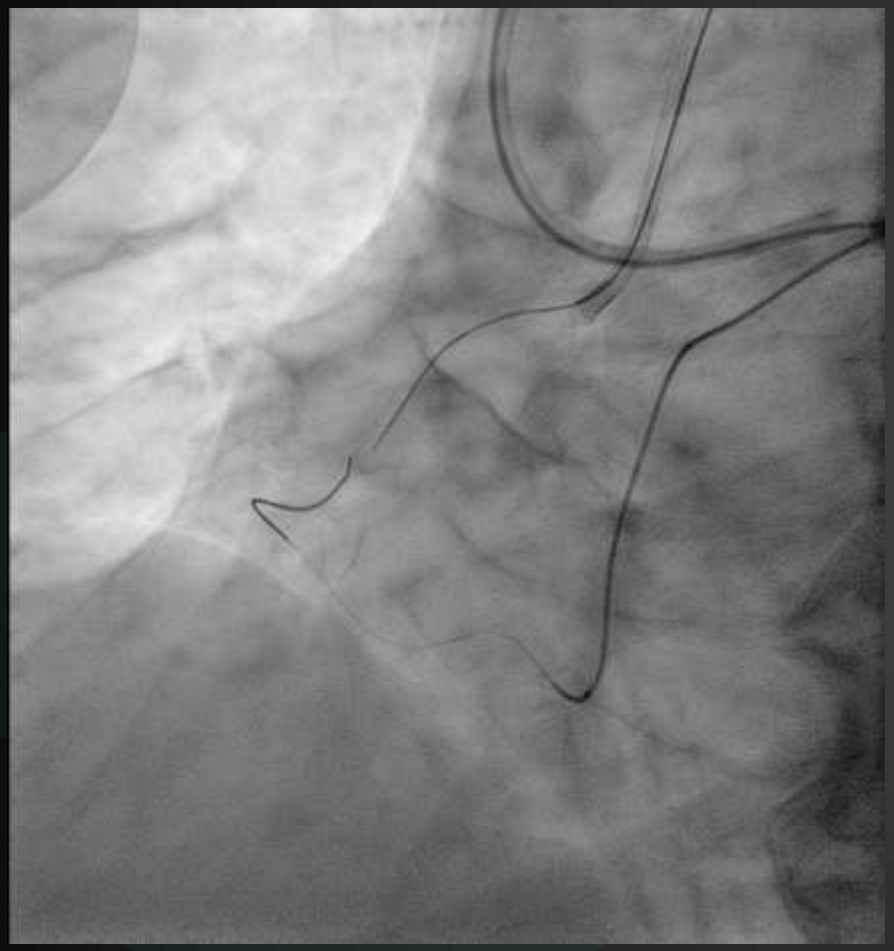


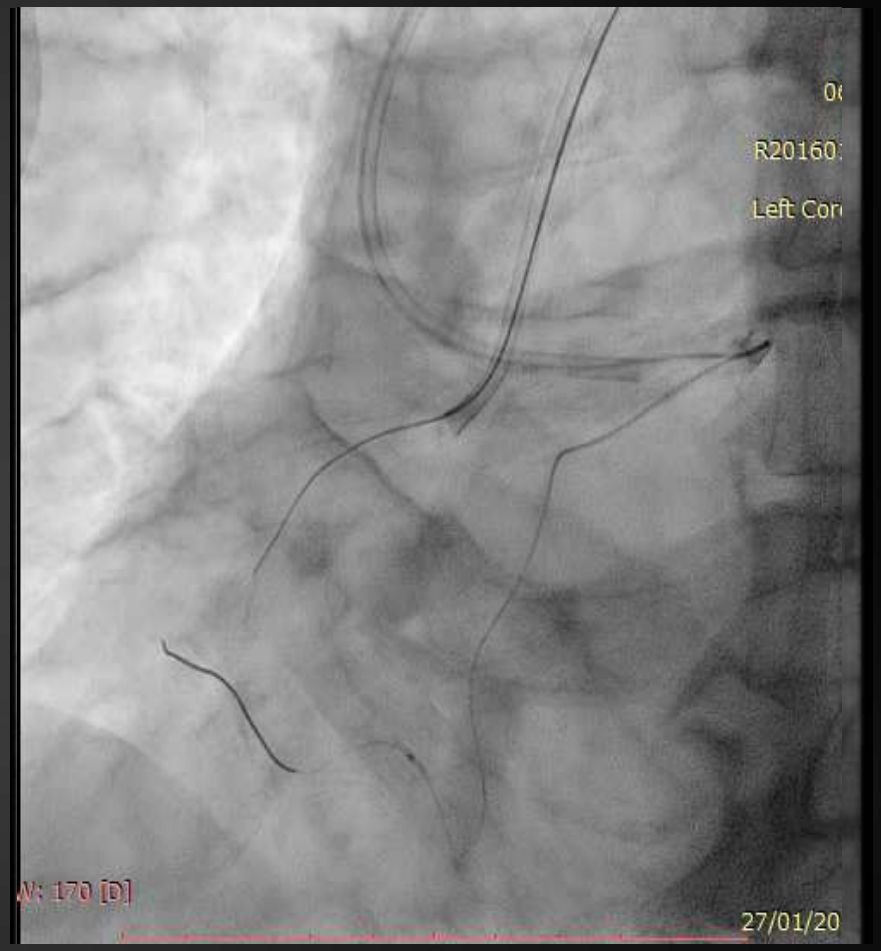


Micro channel selection



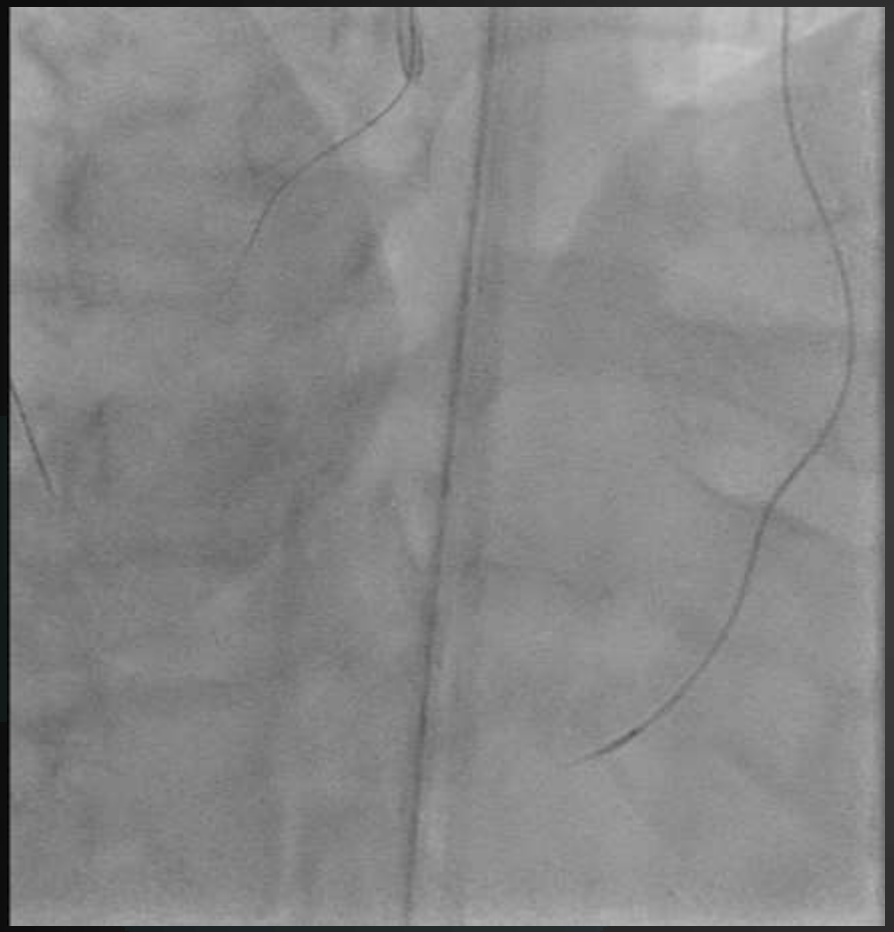


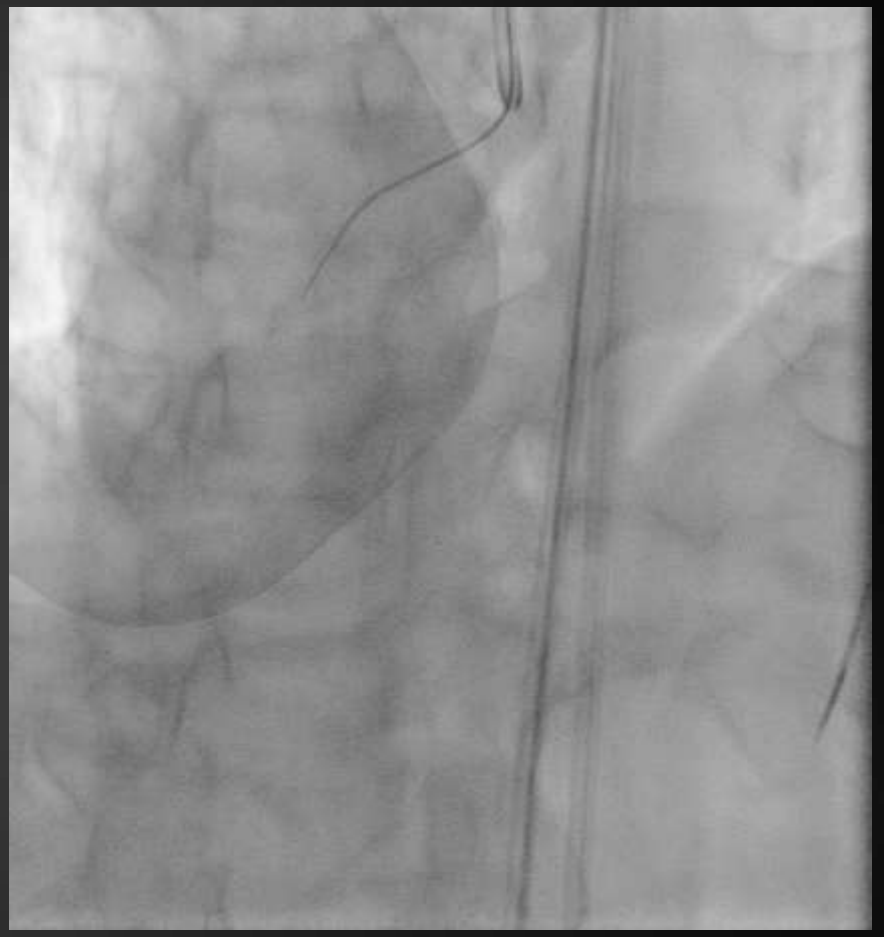




Tazuna 1.25x15 mm @ 6 atm

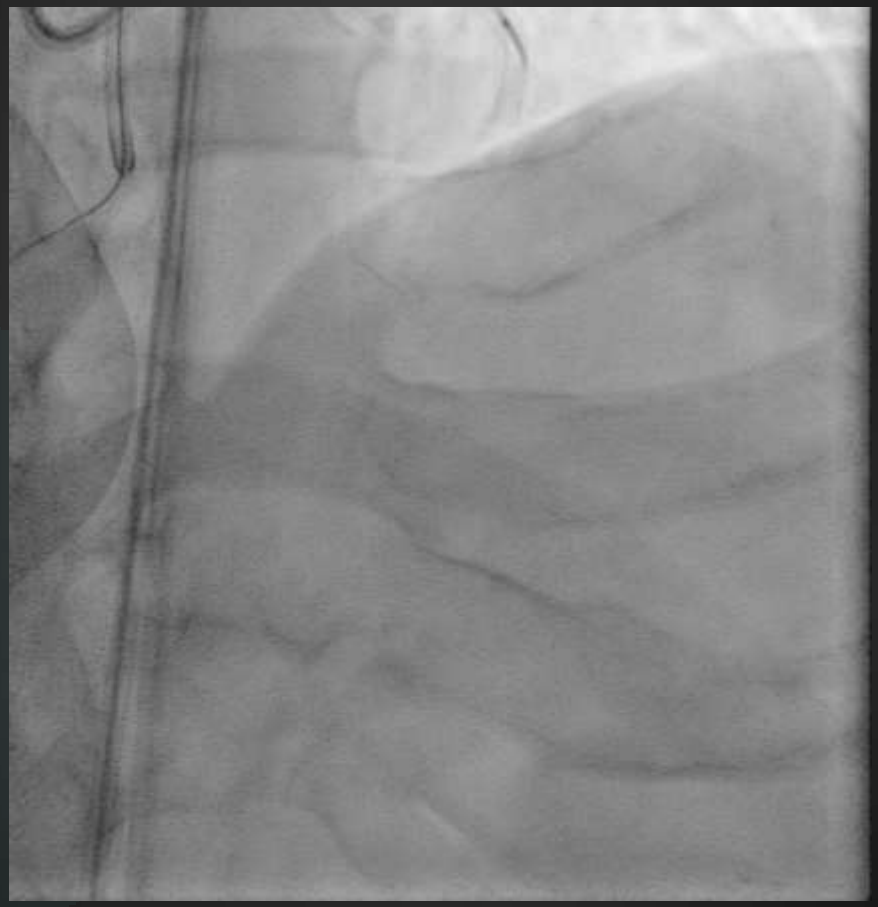
Ao BP 98/58 mmHg →85/61 mmHg



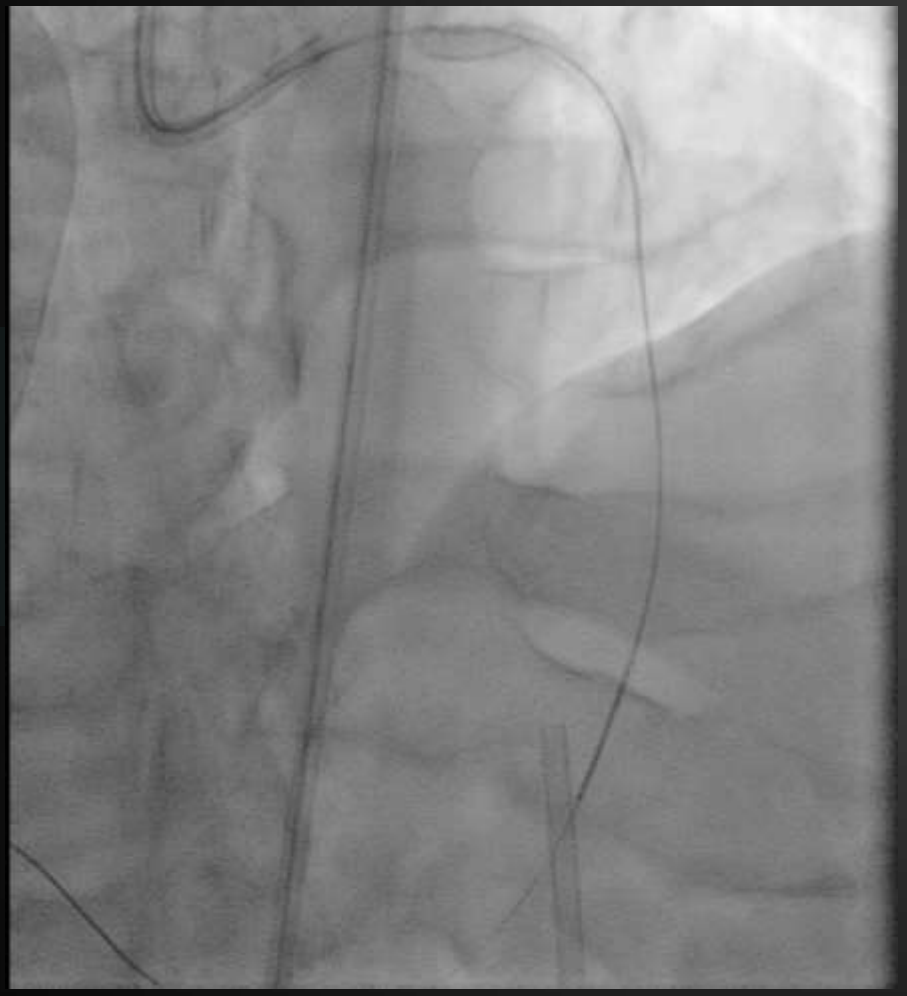


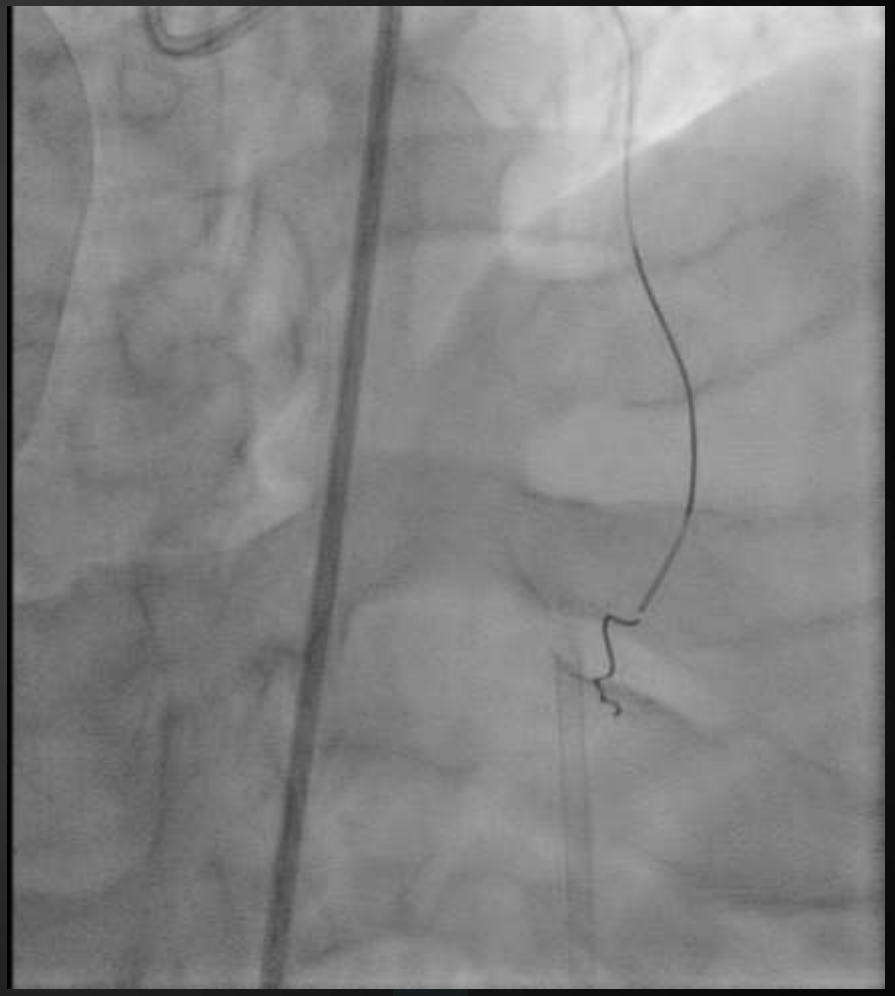
Distal Septal 3 extravasation

Pericardial Tapping
Protamin 25 mg iv → ACT 142 sec

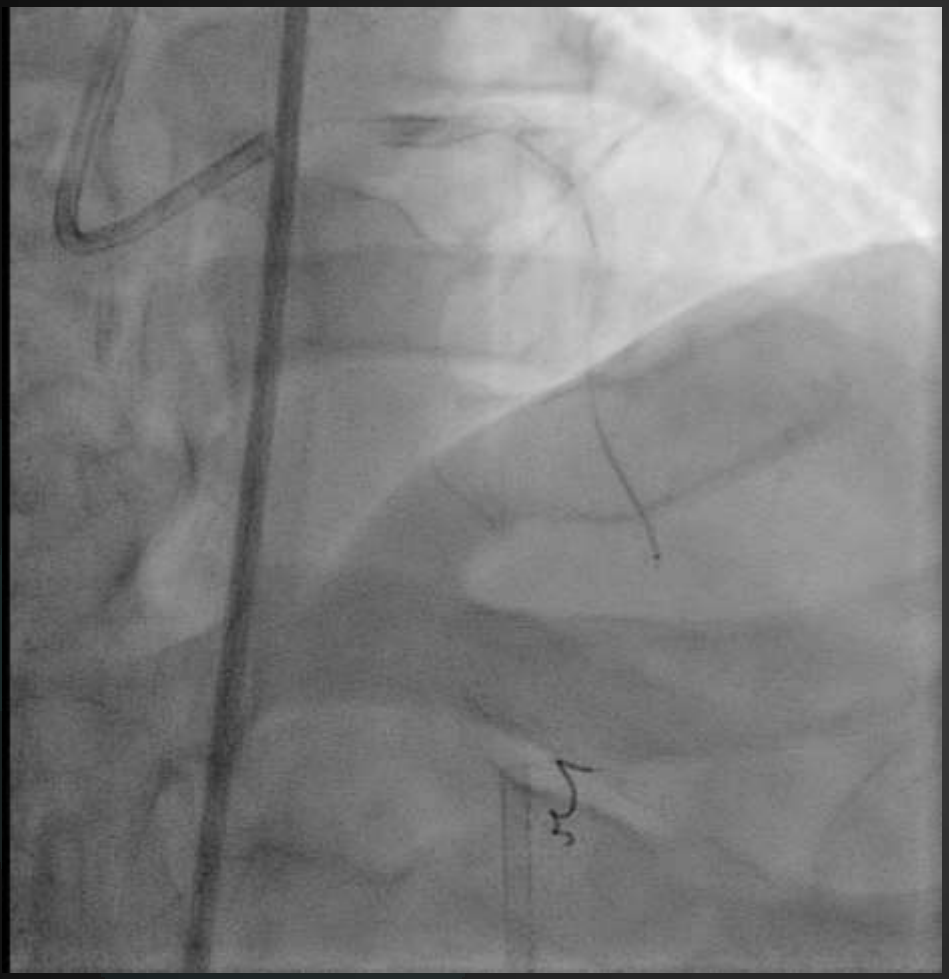


Prograte 2F , Runtrough Hypercoat,
Tornado microcoil 3mm/ 2 mm
Ao BP 100/61 HR 88x/m





Patient return to ICCU



PE 744 cc, auto transfusion 465 CC

No extravasation from angiography

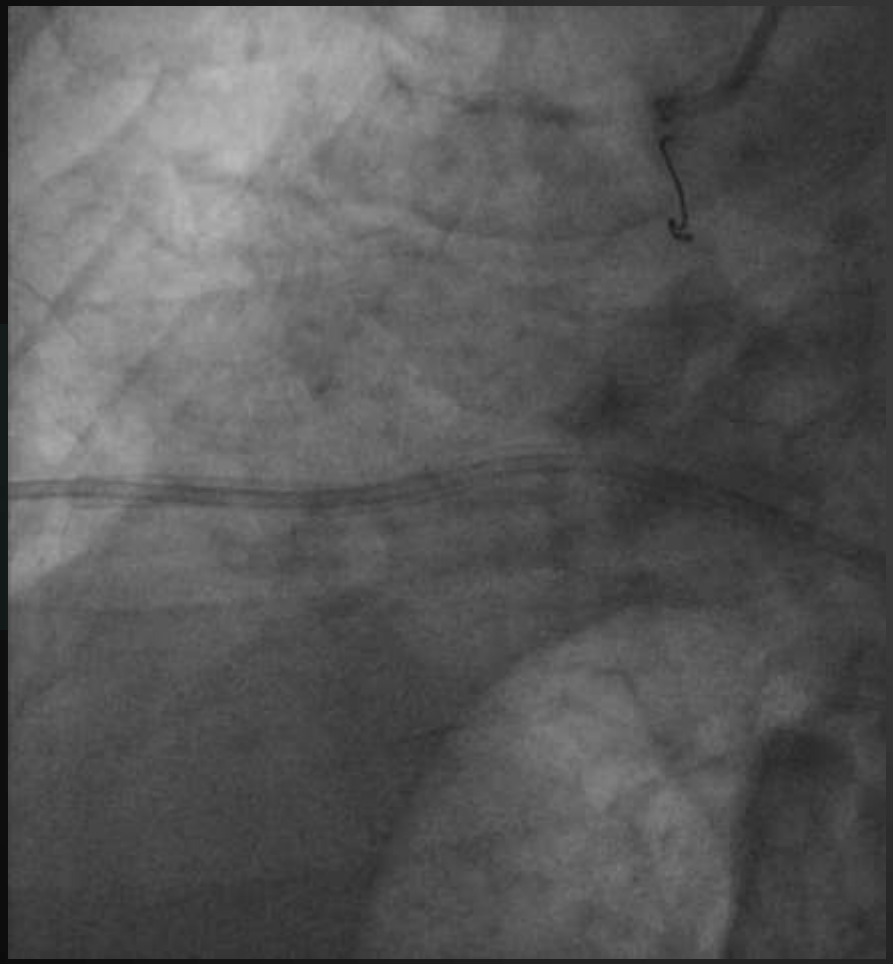
4 hour observation by echo:

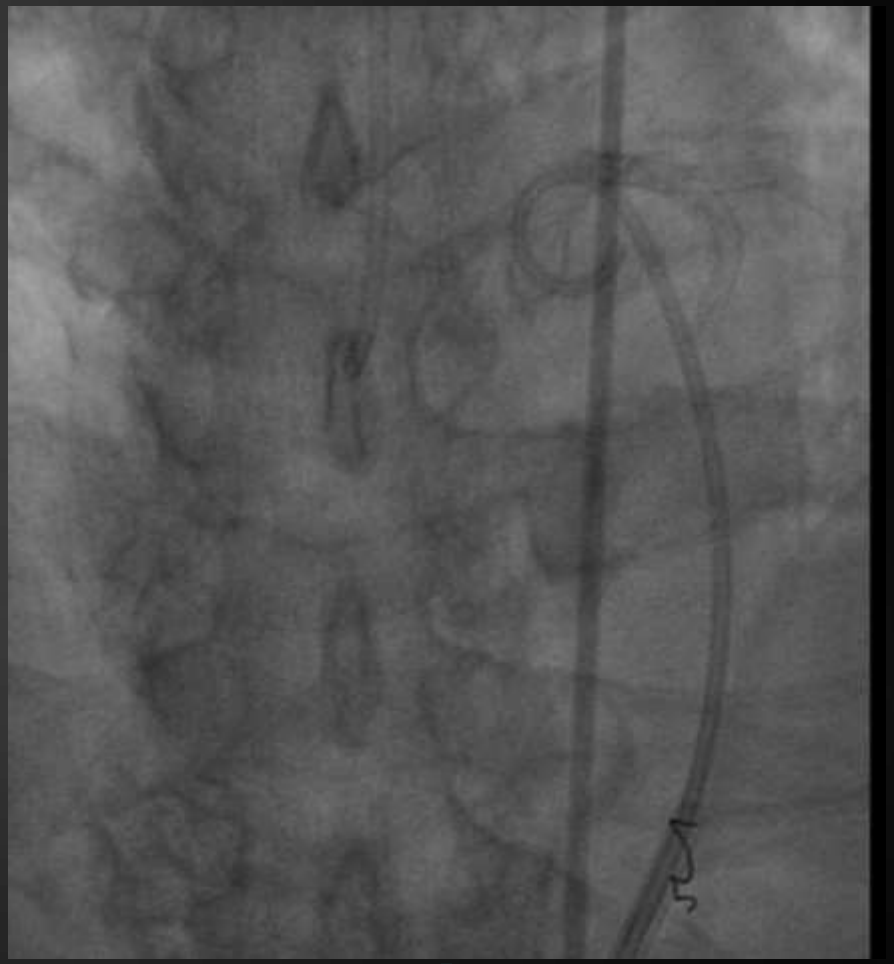
Ongoing pericardial effusion production

Bring back to cath lab

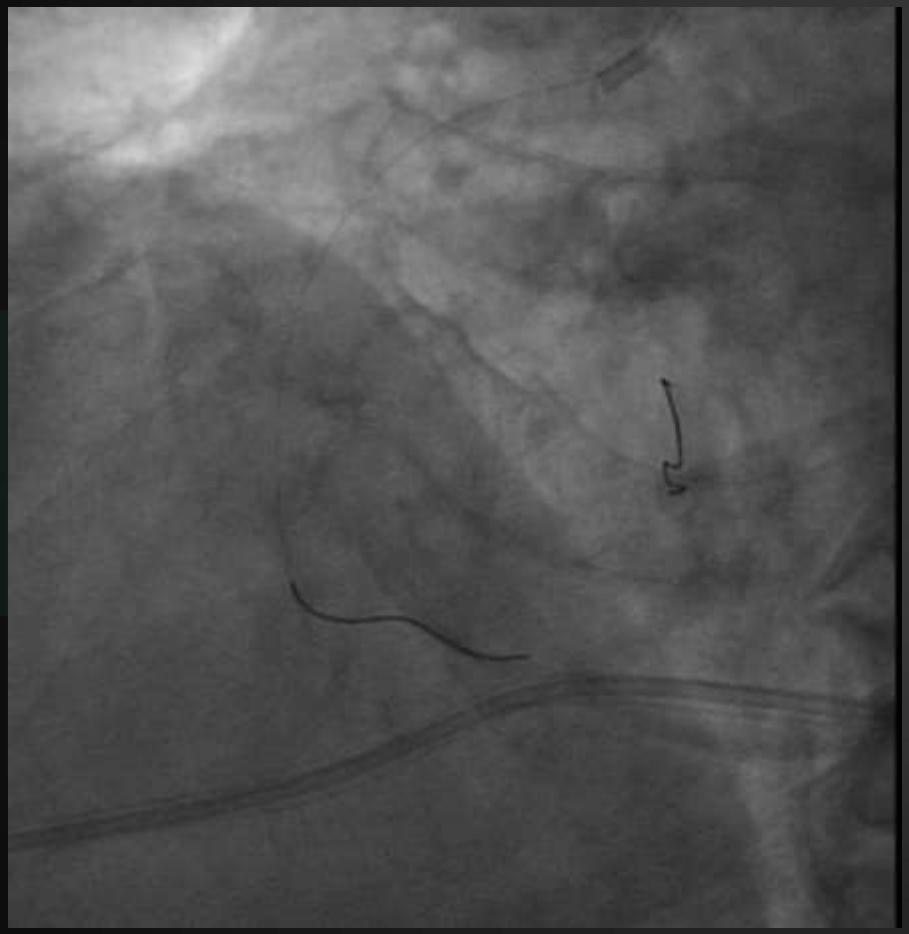
Dual supply collateral

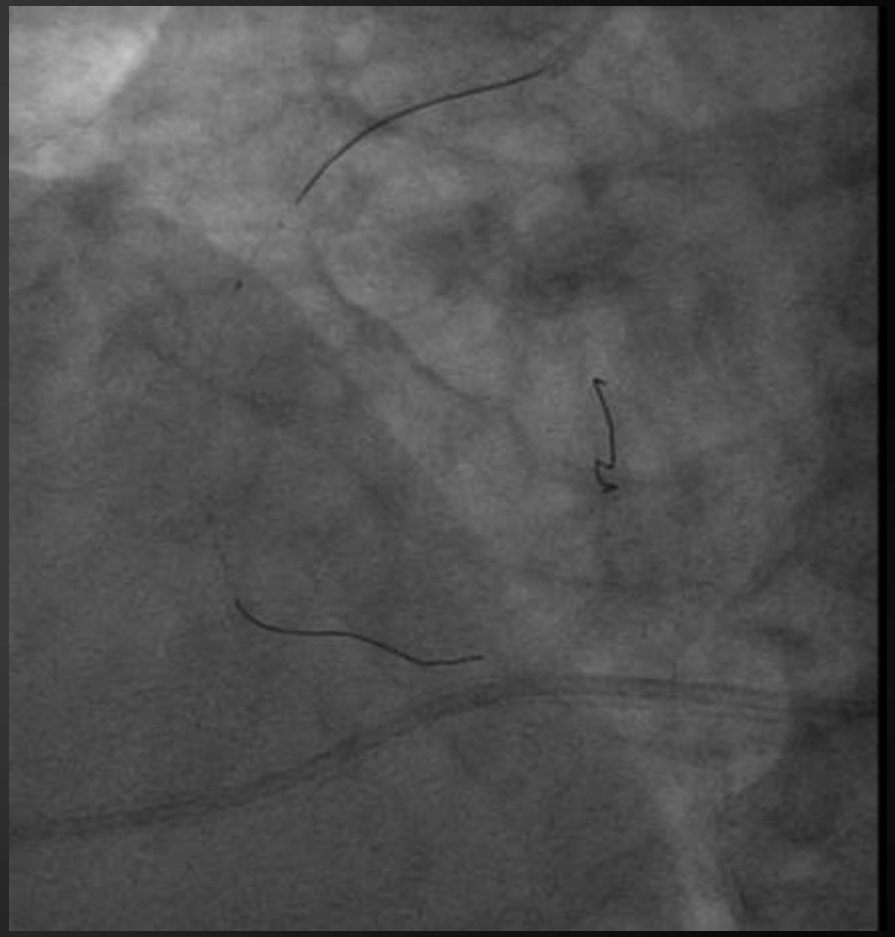
JR 4/6F, BL 3/7F





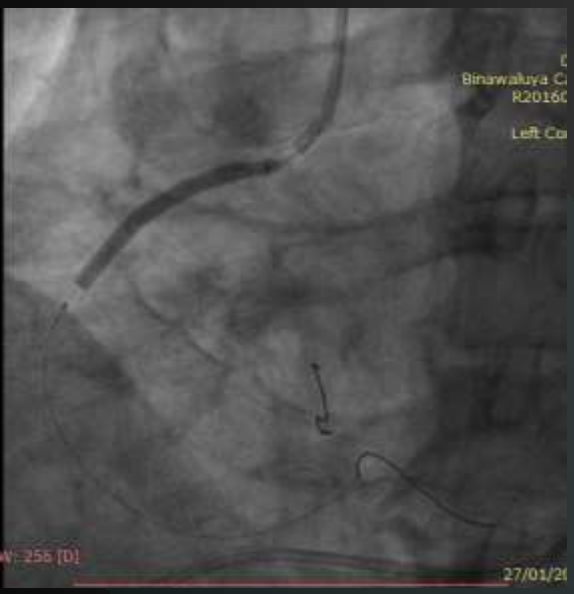
Finecross 1.8F 130, Runtrough Hypercoat, Filder XT-A, Saphirre 1.25x15 mm @ 10 atm, Crusade, Sion Blue

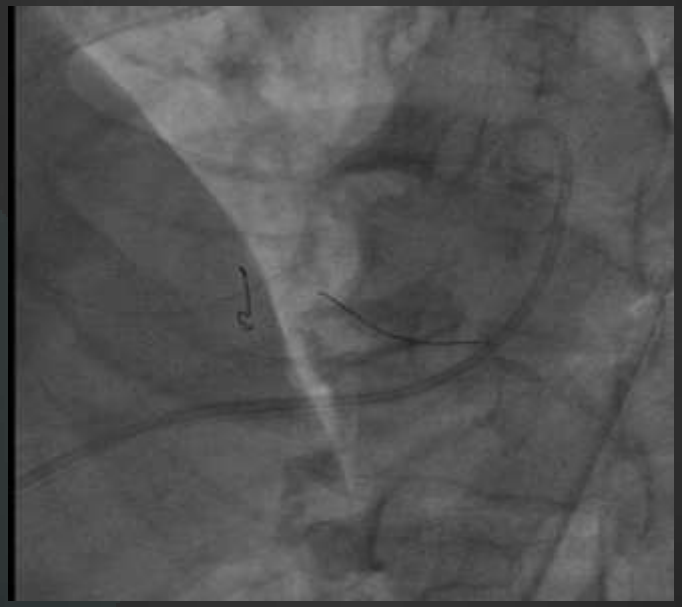


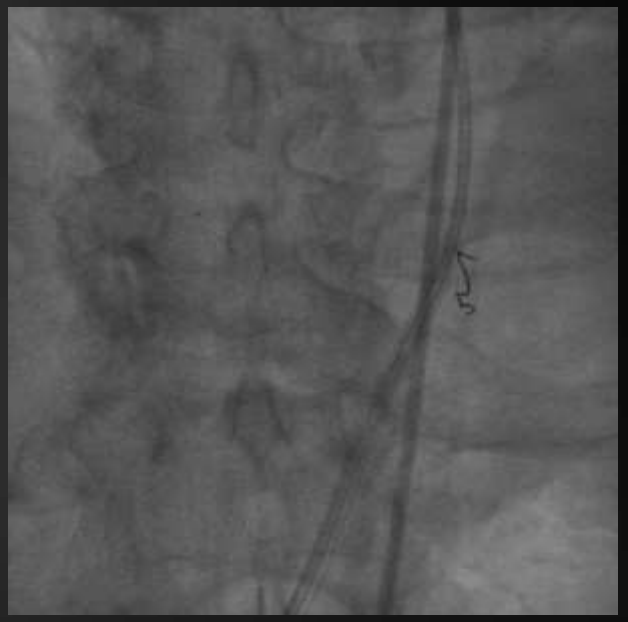


RCA PCI : Ryujin 2.5x15 mm @ 16 atm, Ultimaster 3.0x38 mm @ 10 atm, NC Hiryu 3.5x15 mm @ 16 atm

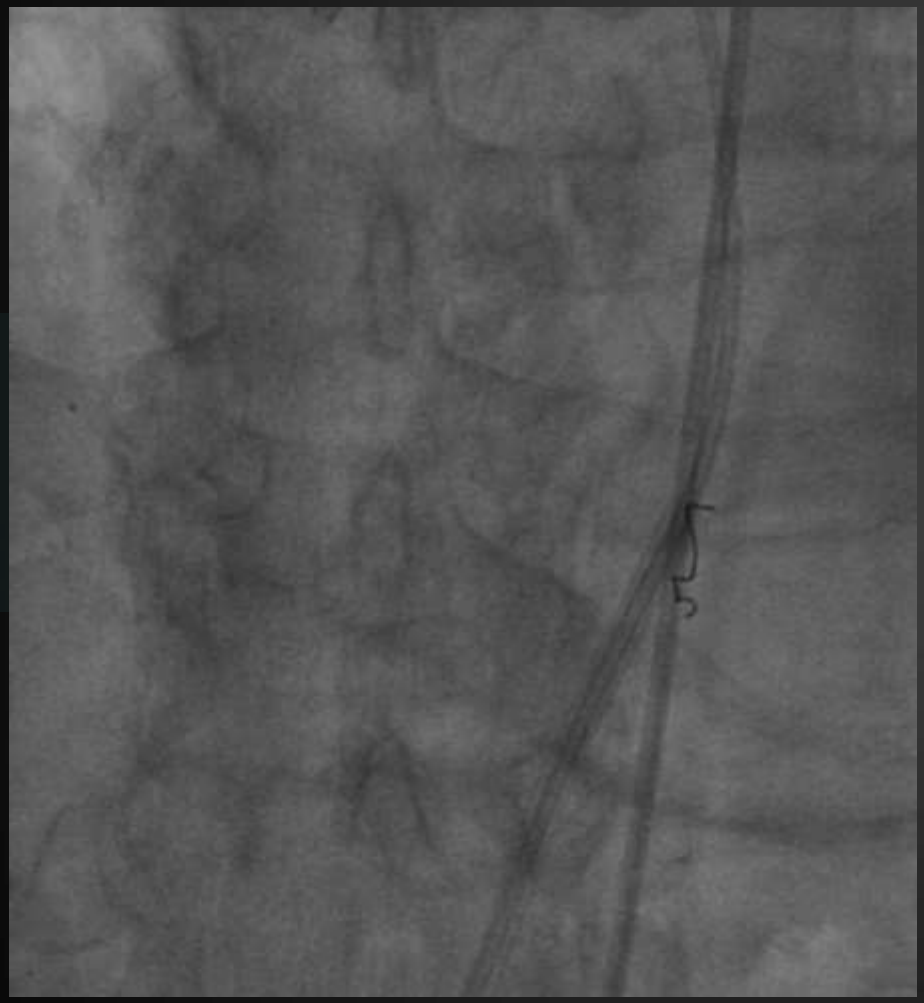
extravasation form RCA micro channel

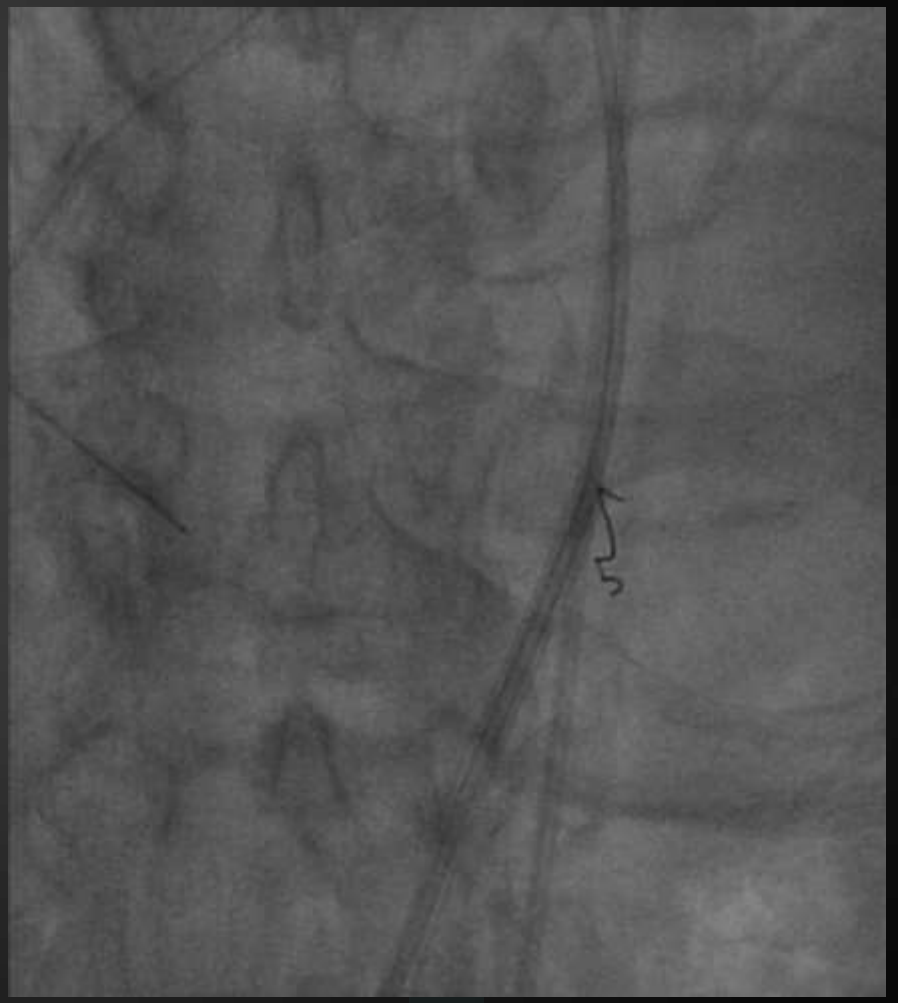




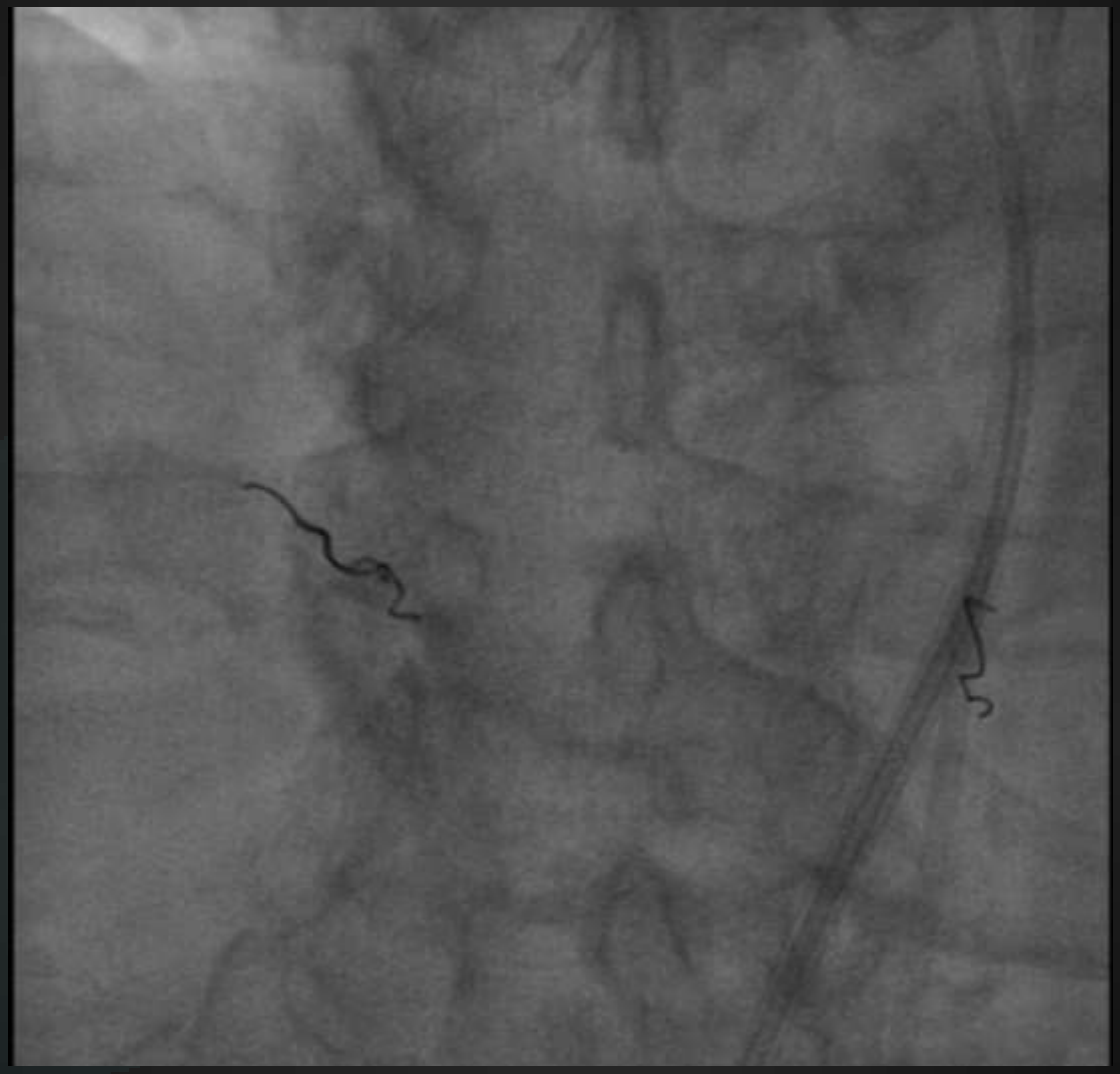


Prograte, Sion blue to RCA Branch, Tornado microcoil 3mm/2mm





Final Result



Following Clinical Course

- The pericardial effusion was incessant → open heart surgery → did not found overt perforation, large thrombus inside pericard
- Full support inotrope and vasopressor tx, ventilator, IABP, and CVVH
- Developed DIC probably due to multiple autotransfusion.
- The patient was improving but had sudden hypotension and eventually shock → suspected of aortic rupture at the 10th day

Discussion

- Coronary Perforations is a rare but potentially catatstrophic complication
- Ellis type III perforation needs pericardiocentesis, higher mortality rate
- Retrograde CTO may increase success rate but with increased risk of collateral channels perforation → readily sealed with coils.

- In dual supply collateral channel perforation, adequate control can only be done by sealing both of donor artery.
- Point of no return: you HAVE TO CROSS the CTO lesion to locate the donor branch
- Warning sign : if the distal artery received filling from ipsilateral artery, be very careful when using retrograde strategy

Take Home message

- Channel perforation is an important complication of CTO PCI
- Always remember of the possibility of dual supply collateral chanel
- If the distal artery is filled by ipsilateral collateral, be very careful in using retrograde approach

Thank You